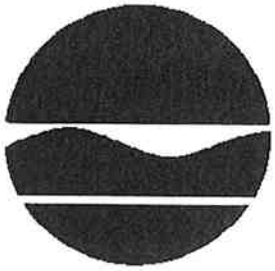
# SUPERFUND STANDBY PROGRAM
## New York State
## Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233-7010

# SITE ID 202: OBERDORFER INDUSTRIES, INC.
# THOMPSON ROAD FACILITY

## SITE SUMMARY REPORT
## REVISION 2



## Onondaga Lake Project
## Task 5: 104(e) Review

**Site No. 734030-002**
**Work Assignment Number D003060-9**

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## CONTENTS

## CONTENTS (Continued)

### TABLES



### FIGURES



### APPENDIX

## 1.0 SITE DESCRIPTION

In general, the information referenced in this report was obtained from the 104(e) responses of both Oberdorfer Industries, Inc. (Company ID 2007) and B&K Metals, Inc. (Company ID 2019). Information obtained from other sources is noted, as necessary.

### 1.1 Location

Oberdorfer's Thompson Road facility (the "site") is located at 6259 Thompson Road in Syracuse, New York. The site location in relation to Onondaga Lake is shown in Figure 1. As shown on the figure and on the Syracuse East USGS topographic map, the site is bound by Thompson Road to the east, Ley Creek South Branch to the north, and industrial property and railroad tracks to the west and south, including property of Roth Brothers Smelting Corporation. A site plan of the facility is shown in Figure 2.

### 1.2 Geology

The surficial geology of the Syracuse area was strongly influenced by the most recent glacial advance (Wisconsin age, 12,000 to 14,500 years ago). Syracuse occupies a region that was covered by Lake Iroquois, a large glacial lake situated in front of the ice margin. The broad flat-lying plains situated from Syracuse north to Lake Ontario were formed beneath Lake Iroquois and are characterized by lacustrine fine sand and silt deposits. Additional glacial features which are common to the region are moraines, drumlins, U-shaped valleys and meltwater channels.

Onondaga Lake and all its major tributaries lie within glacial meltwater channels. These features originally were conduits carrying meltwater at large volumes and high velocities away from the glacier. Sediment types characteristically found in meltwater channels are sands and

gravels. These relict features form important water bearing and transmitting units which form an irregularly branching, net-like pattern (Upstate Freshwater Institute, 1994).

The bedrock geology of the greater Syracuse area includes Lower to Middle Paleozoic age sedimentary rocks predominated by carbonate (dolostone and limestone) and shale and containing some sandstone, siltstone and evaporites. Bedrock directly beneath the site (as well as underneath Onondaga Lake) is the Silurian Vernon Scale (Rickard & Fischer, 1970) which has a low permeability, but does possess secondary porosity due to fractures.

## 1.3 Hydrogeology

Boring logs for three locations in the foundry core sands storage area at the site from 1981 are included in B&K Metals' response. As shown in the logs, the surface soil consists primarily of moist and loose fine to medium sand with some fine to medium gravel and little silt and cinders. At all three locations, groundwater was located at 8 feet below ground surface. Although ground surface elevations were not recorded on the logs, based on the topography shown on the SPDES location map, it is inferred that groundwater beneath the site drains to the South Branch of Ley Creek.

## 1.4 Surface Water Hydrology

As shown in the location diagram in the SPDES permit (not to scale) and Figure 2 herein, site runoff and stormwater is discharged to Ley Creek South Branch approximately 200 feet from the main plant building. The elevation of the creek is approximately 390 feet NGVD, whereas site elevations range from about 400 to 420 feet. The South Branch of Ley Creek intercepts the Main Branch of Ley Creek approximately 8,000 feet downstream of the site. Ley Creek discharges to the upstream end of Onondaga Lake approximately 20,000 feet downstream of this confluence.

## 2.0 SITE HISTORY

### 2.1 Owners/Operators

Oberdorfer Foundries, Inc. (now known as B&K Metals, Inc.) operated at the Thompson Road facility from approximately 1925 to 1991. Oberdorfer Industries, Inc., who purchased certain assets of B&K Metals associated with the Thompson Road facility, has operated at the site from June 1991 to the present. It should be noted that, according to B&K Metals, many documents not required by law to be retained were destroyed at the time of transfer to Oberdorfer Industries; thus, little documentation exists relative to operations at the facility prior to 1991 (B&K Metals, Mailing No. 1, p. 000001).

### 2.2 Site Operations

Both companies primarily manufactured aluminum castings at the Thompson Road facility. The process basically consists of mechanically mixing sand with binders and additives and assembling cores and molds; molten aluminum is poured into the molds and sand is removed by vibration; excess metal is removed from the castings by a sawing and grinding operation; and the castings are heat treated, inspected and shipped (B&K Metals, p. 000005).

According to Oberdorfer's process and wastestream schematics, major raw materials include raw sands, binders (*e.g.*, clay), additives, water, aluminum ingot, aluminum gates and risers, and aluminum saw dust. Also, sodium silicate is used in the impregnator rinse tank and a developer and fixer are used in the x-ray developing unit. Grinding wheels, tallow and oil, hot water, and detergents are used for casting cleaning and washing.

## 2.3 Generation and Disposal of Wastes

Foundry Core Sands

During Oberdorfer Foundries' operations at the site, foundry core sands with binders and additives were routinely generated as scrap during the core-making process. Approximately 50 tons per week of sands were placed on site and, beginning in the 1970s, were transported to the Dewitt Town Landfill for use as daily cover material, with NYSDEC's approval. Since 1991, during Oberdorfer Industries' operations at the site, approximately 60 tons per week of foundry core sands have been accumulated on the southwest portion of the site and are later shipped to Auburn Municipal Landfill in Auburn, New York.

As shown in Exhibit 6(A-1) of B&K Metals' response, RCRA extraction procedure (EP Toxicity) tests for heavy metals were conducted on three soil/waste samples collected from the foundry sand storage area in 1981 and indicated that the materials were non-hazardous. Parameters not detected in the extract in all three samples include lead (less than 0.02 mg/L) and mercury (less than 0.002 mg/L). In addition, phenol and cyanides in the three samples were below detection limits (less than 0.10 mg/L and 0.04 mg/L, respectively). Analytical results from a foundry sand sample collected in 1991 are included in Exhibit 6(B) of Oberdorfer's response. Total metals detected include chromium (9 mg/kg, ppm), copper (6.5 mg/kg), zinc (6.9 mg/kg), iron (360 mg/kg), and aluminum (2,100 mg/kg). Lead (less than 9 mg/kg) and mercury (less than 0.02 mg/kg) were not detected in the sample. Detected parameters from the Toxicity Characteristic Leaching Procedure (TCLP) analysis on the sample include total phenols, antimony, barium, mercury (0.4 µg/L), zinc, aluminum (0.82 mg/L), iron, and manganese (all less than 1 mg/L). Total lead was not detected in the TCLP sample (less than 0.1 mg/L).

Baghouse/Cyclone Dust

According to B&K Metals, baghouse dust was collected from approximately 1950 to 1991 and disposed with foundry core sands. An estimate of the quantities of dust disposed and analytical data for the dust were not included in the response. B&K Metals classified the material as non-hazardous (p. 000006). Since Oberdorfer Industries commenced operations in 1991, metal/aluminum grinding (cyclone) dust (about 250 lbs/month) is held on site in 55-gallon drums prior to shipment to a permitted landfill. Also, sand blast and grit blast baghouse dust (about 1,300 lbs/week) is stored on site prior to disposal at a permitted landfill. No analytical data for the dust was included in Oberdorfer's response.

Aluminum Alloys and Recyclable Metals

Non-hazardous aluminum alloys and recyclable process metals have been and are continuing to be sent to Roth Brothers Smelting Corporation for resmelting and recycling (currently 542,000 lbs/year). Aluminum alloy furnace dross is currently shipped to United Alloys and Steel Corporation (482,000 lbs/year). Prior to 1993, this furnace dross was shipped to Roth Brothers. Approximately 1,000 tons per year of aluminum alloys are currently remelted in on-site furnaces.

Wastewater Pretreatment Sludge

Since the late 1970s, process wastewater was pretreated in a settling tank prior to discharge to the municipal sanitary sewer (see Exhibit 10(A) of Oberdorfer's Mailing No. 1 for the wastewater stream diagram). According to B&K Metals' response, approximately 6 to 8 tons per year of settled solids (filter cake) were disposed at sanitary landfills from the late 1970s to 1991. No landfill names were provided. During Oberdorfer's operations at the site, approximately 14 tons per year of pretreatment sludge were disposed at Auburn Municipal

Landfill and Seneca Meadows Landfill in Waterloo, New York. Analytical results for a wastewater sludge sample collected in 1991 are included in Exhibit 6(C) of Oberdorfer's response. TCLP analyses were performed for metals, herbicides, pesticides, semi-volatiles, and volatiles. Detected parameters include arsenic (0.003 mg/L), barium (2.7 mg/L), cadmium (0.005 mg/L), and mercury (0.6 µg/L). Both B&K Metals and Oberdorfer classified the sludge as non-hazardous.

Hazardous Wastes

Both B&K Metals and Oberdorfer Industries provided copies of hazardous waste manifests from 1984 to 1989. Wastes disposed in 55-gallon drums include waste triethylamine/flammable liquid, PCB and waste oils, waste petroleum distillates, 1,1,1-trichloroethane, ethyl alcohol, and methylene chloride. Except for PCBs, as described below, the specific sources of these hazardous wastes were not identified. Except for Solvents & Petroleum Service, Inc. in Syracuse, all disposal locations were outside of the Onondaga Lake basin. According to Oberdorfer, no hazardous wastes were generated or shipped from 1991 to the present (Oberdorfer, Mailing No. 4, p. 000140).

According to B&K Metals' response (p. 000004), the Oswego Castings Site in Oswego County (approximately one-half mile from Lake Oswego) is currently on NYSDEC's Registry of Inactive Hazardous Waste Disposal Sites. An RI/FS is currently being performed at the site pursuant to an Order on Consent executed by B&K Metals. It was reported by B&K Metals that operations at the Oswego facility, where extensive PCB contamination exists both in the interior of buildings and in the outdoor environment, were similar in nature to operations at the Thompson Road facility in Syracuse (NYSDEC, 1996). According to B&K Metals' Mailing No. 3 (March 6, 1996), hydraulic oils containing PCBs were used in the die casting process at their Oswego facility. However, as stated by B&K Metals, die casting was not performed at their Thompson Road facility and PCB hydraulic oil was not used.

According to B&K Metals' Mailing No. 4 (November 20, 1996), some equipment originally in use at the Oswego facility (but never in use at the Thompson Road facility) was transferred to the Thompson Road facility for cleaning in 1991 prior to resale. This cleaning generated debris and wash water containing low levels of PCBs. The PCB-contaminated wastes (less than 500 ppm PCBs) were disposed at a facility in Kansas in August 1991. A liquid sample of this waste material contained 370 µg/L PCB Aroclor 1254. In addition, fourteen 55-gallon drums of wastewater were discharged in August 1991 to the sewer system under authorization from Onondaga County Department of Drainage and Sanitation (OCDDS). PCBs were not detected (less than 0.05 µg/L) in a wastewater sample collected in July 1991.

# 3.0 POTENTIAL PATHWAYS FOR RELEASE OF HAZARDOUS SUBSTANCES TO THE LAKE SYSTEM

## 3.1 Soil

As described in Section 2, foundry core sands and baghouse dust are stored on site and represent potential sources of contaminants to the soil. Other potential sources of contaminants to the soil include particle deposition from air emissions and spillage from drums containing hazardous waste. The extent of on-site soil contamination is described in Section 4.

## 3.2 Surface Water

There are two potential sources of contaminants to surface water near the site. Contaminants in surficial soil and non-contained waste storage areas can be transported to the South Branch of Ley Creek by erosion due to surface water runoff during precipitation events and by dusting during dry, windy conditions. In addition, Oberdorfer has five SPDES-permitted outfalls (NYSDEC, 1987, Permit No. NY-0003026) which transmit stormwater and cooling water directly to the South Branch of Ley Creek (see Figure 2 for outfall locations). A review of recent analytical data from Oberdorfer's Discharge Monitoring Reports is provided in Section 4. Also, a discussion of NYSDEC's recent (November 1996) surface water and sediment sampling of the South Branch of Ley Creek is provided in Section 4.

## 3.3 Groundwater

There is also potential for transport to the lake system through migration of contaminants from soil into groundwater and subsequent transport to Ley Creek via groundwater flow. The extent of on-site groundwater contamination is described in Section 4.

## 3.4 Air

Particulate matter released from air emissions associated with certain processes is a potential source of contaminants to the atmosphere. B&K Metals' response includes copies of numerous NYSDEC Certificates to Operate an Air Contamination Source, Renewal Applications (B&K Metals, pp. 000056 to 000092). Air contaminants permitted include aluminum, chlorine, miscellaneous organics, chloromethane, silica, phenols, formaldehyde, and particulate matter.

## 3.5 County Sewer System

Sanitary wastewater and process wastewater (aluminum casting effluent, mold cooling, casting quench) were historically discharged to the Onondaga County municipal sewer system for subsequent treatment at the Metropolitan Syracuse Wastewater Treatment Plant and ultimate discharge to Onondaga Lake (OCDDS, 1990, Industrial Wastewater Discharge Permit No. 19, Oberdorfer, Mailing No. 4, pp. 000142-000153). Pretreatment of the process wastewater, consisting of settling and sand filtration, commenced in 1977 (B&K Metals, p. 000009). The wastewater is pretreated to conform to the effluent limitations established in the USEPA Metal Molding and Casting Point Source Category (40 CFR Part 464, Aluminum Casting Subcategory). In addition, non-regulated process discharges are permitted from casting processing and testing (sodium silicate rinse, Zyglo rinse, x-ray rinse, and hydrostatic testing).

# 4.0 LIKELIHOOD OF RELEASE OF HAZARDOUS SUBSTANCES TO THE LAKE SYSTEM

## 4.1 Documented Releases

According to B&K Metals, there were "no known spills or incident releases" during their period of operation (B&K Metals, p. 000008). Oberdorfer Industries stated that there were "no reportable or reported spills or discharges of hazardous substances or hazardous waste" during their period of operation (Oberdorfer, p. 000006).

Current releases of wastes into the environment from the Oberdorfer facility include the discharge of wastewater to the sewer system, the discharge of stormwater and cooling water to the South Branch of Ley Creek through SPDES-permitted outfalls, the temporary disposal of process wastes on the southwest portion of the site, and the release of contaminants to the atmosphere from stack emissions.

## 4.2 Threat of Release to the Lake System

### 4.2.1 Extent of Site Contamination

A summary of the analytical data submitted by both companies and NYSDEC is provided below.

Soil

Both companies stated that the site was classified as a Class 2a Site on the Registry of New York State Inactive Hazardous Waste Disposal Sites and, in May 1991, based on a petition by Oberdorfer Foundries and NYSDEC confirmatory sampling, the site was delisted.

NYSDEC provided copies of the field notes and lab report. Two soil samples were collected in the "old disposal area" (west of the foundry building) and in the "new/active disposal area" (southwest corner of site) in March 1991 at depths of 12 to 16 inches. The samples were analyzed for volatile organics, semi-volatile organics, inorganics/metals, and PCBs (Aroclors). TCLP analyses were not performed on these soil samples.

For the "old disposal area" sample, all volatile organics were either not detected or less than 5 ppb (µg/kg) and detected semi-volatile compounds include phenol (96 ppb) and benzoic acid (100 ppb). PCBs were not detected by mass spectrometer in this sample (80 ppb detection limit per Aroclor). Detected metals include arsenic (1.2 ppm [mg/kg]), chromium (2.1 ppm), and lead (3.3 ppm). Metals not analyzed include aluminum, barium, beryllium, calcium, cobalt, copper, iron, magnesium, manganese, potassium, sodium, thallium, and tin.

For the "new disposal area" sample, the only volatile organics detected were 1,1-dichloroethene (12 ppb) and benzene (4 ppb, blank contamination). Semi-volatiles detected include phenol (310 ppb), 2-methylphenol (1200 ppb), naphthalene (830 ppb), 2-methylnaphthalene (710 ppb), and phenanthrene (57 ppb). PCBs were also not detected in this sample (80 ppb detection limit). Detected metals include chromium (2.1 ppm), lead (11 ppm), and zinc (11.4 ppm).

The results of these two samples led to the delisting of the Oberdorfer site. Results for samples of the foundry core sand material which is stored on-site are contained in Section 2.3.

Groundwater

Three monitoring wells exist in the "new/active disposal area" in the southwestern portion of the site adjacent to the Roth Brothers Smelting Corp. property (see Figure 2 for approximate location of wells).

Oberdorfer Industries provided groundwater analytical results for a 1993 sampling event (Mailing No. 5, March 12, 1996) and three 1981 sampling events (Mailing No. 6, June 24, 1996). A single sample was collected at each of the three wells in February 1993. Total cyanide was not detected (less than 0.01 mg/L) in each well (Class GA groundwater standard of 0.1 mg/L). Total aluminum was detected at a concentration of 140 mg/L in well MW-1, 29 mg/L in well MW-2, and 53 mg/L in well MW-3 (no Class GA groundwater standard). Total arsenic and total lead were each detected at concentrations greater than the Class GA groundwater standard of 0.025 mg/L; concentrations of total arsenic in the three wells ranged from 0.028 mg/L to 0.068 mg/L while concentrations of total lead ranged from 0.063 mg/L to 0.24 mg/L. Total phenols were detected in well MW-3 at a concentration of 0.007 mg/L (Class GA groundwater standard of 0.001 mg/L) but were not detected in the other two wells (less than 0.005 mg/L).

The three wells were sampled in February, March, and April 1981. Phenol was detected in each of the three wells above the Class GA groundwater standard (0.001 mg/L) at concentrations ranging from less than 0.01 to 0.239 mg/L. Cyanide was also detected in each well but at concentrations less than the groundwater standard (0.1 mg/L). All metals analyzed, including arsenic, barium, cadmium, chromium (hexavalent and total), lead, mercury, silver, and selenium, were either not detected or were detected at concentrations less than the standards.

Discharge Data

As stated in Section 3 of this report, both companies discharged wastewater and stormwater/cooling water to the county sewer system and the South Branch of Ley Creek, respectively.

Oberdorfer's discharge of pretreated process wastewater to the municipal sewer is regulated by the Onondaga County Department of Drainage and Sanitation (OCDDS). According to Oberdorfer, pretreated process wastewater discharges to the sewer are intermittent and limited to 67 gpm and approximately 2.7 million gallons are pretreated and discharged each year (Oberdorfer, p. 000007). Oberdorfer provided analytical results of sewer samples collected in 1994 in Exhibit 10(B) of Mailing No. 1. Samples collected in February 1994 from sewer 2 (effluent from wastewater pretreatment plant prior to discharge to sanitary sewer) contained a maximum of 0.2 mg/L total copper, less than 0.1 mg/L lead, 0.12 mg/L zinc, 690 mg/L oil and grease, and non-detectable concentrations of volatile organics and semi-volatile organics (minimum detection limit of 500 µg/L). Four-day averages recorded at sewer 2 during this period were 610 mg/L for oil and grease, 5 mg/L for hydrocarbon/oil and grease, 0.11 mg/L for total copper, less than 0.1 mg/L for total lead, and 0.1 mg/L for total zinc.

Oberdorfer also provided copies of recent Notices of Violation received from the OCDDS related to their sewer discharge permit. The violations occurred both before and after installation of ultrafiltration equipment. Numerous violations for oil and grease were reported by OCDDS for sewer 2 (pretreated effluent) from 1992 to 1995 (including a concentration of 540 mg/L in June 1995, Oberdorfer, p. 000207). Both the daily maximum limitation of 77.9 mg/L and the maximum monthly average concentration of 25.9 mg/L were exceeded during this period. According to the August 1995 Response Form submitted by Oberdorfer to the OCDDS, the source of the oils was not identifiable and "the hydraulic fluid used in the water immersed pressure test machines will be replaced with a vegetable oil based fluid" (Oberdorfer, p. 000223). Also, during this time period, two exceedances were reported for copper (maximum of 9.4 mg/L, limit 1.99 mg/L) and one for pH (9.6).

The SPDES permit includes a limitation on the total stormwater and cooling water discharge from the outfalls of the facility to Ley Creek South Branch of approximately 10,000 gallons

per day (gpd) (B&K Metals, p. 000044). Other discharge limitations include lead (0.5 mg/L), zinc (1.0 mg/L), oil and grease (15 mg/L), and TSS (45 mg/L). Discharge Monitoring Report (DMR) monthly data were provided from 1993 to October 1995. During this period, the discharge limit for oil and grease was exceeded twice, in June 1993 ( 820 mg/L @ 730 gpd = 5.0 lb/day) and November 1994 (17 mg/L @ 4,320 gpd = 0.6 lb/day). The discharge limits for lead and zinc, sampled on a semi-annual basis, were not exceeded during this time period.

Air

Analytical results of baghouse dust samples are included in B&K Metals' Mailing No. 1 (p. 000022). RCRA extraction procedure tests were conducted on three baghouse dust samples. Results indicated that the materials were non-hazardous (B&K Metals, p. 000022). According to NY State Air Emissions Permits included in B&K Metals' response, actual annual air emissions of aluminum ranged from 3,900 lbs/year to 5,500 lbs/year (it was not stated whether these quantities were released before or after treatment). Other contaminants discharged include chlorine (approximately 700 lbs/year), miscellaneous organics (2 lbs/year), chloromethane (1,125 lbs/year), and particulates (8,700 lbs/year).

Oberdorfer Industries provided copies of USEPA Form R, Toxic Chemical Release Inventory Reporting Forms, for 1991, 1992, and 1993. According to these forms, Oberdorfer released 11 to 499 pounds per year (range code B) of aluminum dust via stack emissions (Oberdorfer, pp. 000069, 000087, and 000105).

Sediment/Surface Water

Sediment and surface water data for the on-site ditch or the nearby South Branch of Ley Creek were not provided by either company.

NYSDEC Sampling of Ley Creek South Branch

Sediment and surface water in the South Branch of Ley Creek were sampled by NYSDEC in 1996 for inorganics (metals), polychlorinated biphenyls (PCBs), semivolatile organic compounds (SVOCs), and volatile organic compounds (VOCs). Approximate sample locations are shown in Figure 3, as well as the location of the Oberdorfer/B&K Metals site and two nearby 104(e) review sites, including Roth Brothers Smelting Corporation's Thompson Road facility (Site ID 206), which abuts the Oberdorfer site on the southern and western borders of the Oberdorfer site, and the Lockheed Martin/General Electric Court Street facility (Site ID 211). Analytical data of the Ley Creek South Branch samples, retrieved from the NYSDEC/TAMS Onondaga Lake Data Management System, are tabulated in Appendix A of this report and are summarized below.

Sediment

Analyses of metals in sediments indicate contamination in the vicinity of Oberdorfer Industries. While there are no set sediment standards, levels of risk (Lowest Effect Level and Severe Effect Level) have been compiled by NYSDEC's Division of Fish and Wildlife and Division of Marine Resources for the purpose of screening contaminated sediments (NYSDEC, 1993). Sediments are classified as severely contaminated or moderately contaminated, based on the concentrations required to produce adverse ecological effects. Sediments are considered "moderately contaminated" if the concentration exceeds the Lowest Effect Level and "severely contaminated" if the concentration is greater than the Severe Effect Level. Table 1 presents the results and criteria for the metals of concern, which are those metals for which two or more locations are considered contaminated, as discussed below.

**Table 1: Concentrations of Metals of Concern in Sediments of Ley Creek South Branch, NYSDEC Sampling, November 1996**

| | LEL | SEL | L-27 | L-26 | L-25 | L-24 | L-22 | L-28 |
|---|---|---|---|---|---|---|---|---|
| Approximate location in relation to Oberdorfer | | | 5,000 ft upstream | 3,000 ft upstream | 300 ft downstream of Oberdorfer outfall to Ley Creek | Northern border of Oberdorfer at mouth of ditch near Rupp Road | 1,000 ft downstream at mouth of Roth Bros. Ditch | 3,000 ft downstream |
| Aluminum | -- | -- | 3530 | 5270 | 6860 | 4470 | 13100 | 25900 |
| Cadmium | 0.6 | 9.0 | 1.5 | 1.2 | 2.1 | 0.89 | 5.9 | 0.11 |
| Chromium | 26.0 | 110.0 | 20.5 | 27.2 | 41.6 | 13.1 | 42.2 | 38.9 J |
| Copper | 16.0 | 110.0 | 52.4 J | 42 J | 197 J | 118 J | 423 J | 28.8 |
| Iron (%) | 2.0 | 4.0 | 1.0 | 1.1 | 1.5 | 2.6 | 1.6 | 3.6 |
| Lead | 31.0 | 110.0 | 134 J | 77.3 J | 153 J | 1170 J | 429 J | 11.1 J |
| Mercury | 0.15 | 1.3 | 0.1 | 0.12 | 0.19 | 0.11 | 0.19 | 0.08 |
| Nickel | 16.0 | 50.0 | 14.8 | 18.2 | 37.3 | 19.9 | 38.6 | 35 J |
| Silver | 1.0 | 2.2 | 0.17 | 0.13 | 2.2 | 0.59 | 9.3 | 0.34 |
| Zinc | 120.0 | 270.0 | 206 J | 811 J | 383 J | 155 J | 781 J | 78.7 J |

Notes: a. All concentrations in mg/kg or ppm except iron, which is expressed in % where 1% = 10,000 mg/kg
b. LEL = Lowest Effect Level from NYSDEC, 1993, Table 2
c. SEL = Severe Effect Level from NYSDEC, 1993, Table 2
d. J = Estimated value
e. For complete results, see Appendix A

For most inorganics, concentrations increased in the downstream direction of Ley Creek. Locations L-26 and L-27, both of which are a significant distance upstream of Oberdorfer Industries, are moderately contaminated by cadmium and copper. L-27 is moderately contaminated by zinc, while L-26 is considered severely contaminated by zinc. Lead contamination is severe at L-27, and moderate at L-26. L-26 is also moderately contaminated by nickel and chromium.

Location L-25 is adjacent to Oberdorfer Industries, 50 feet upstream of Thompson Road, and downstream of the outfall shown in Figure 2. This location was found to be severely contaminated by copper, lead, and zinc, and moderately contaminated by cadmium, chromium, mercury, nickel, and silver. Location L-24, which was sampled in Ley Creek South Branch at the northeastern corner of the Oberdorfer site, at the mouth of the Oberdorfer ditch near Rupp Road, was found to be severely contaminated by copper and lead, and moderately contaminated by cadmium, iron, nickel, and zinc. Estimated concentrations of lead increased from 153 mg/kg at L-25 to 1,170 mg/kg at L-24, suggesting that the Oberdorfer ditch is an additional source of lead to the creek. Elevated concentrations of lead were found throughout the adjacent Roth Brothers site, including sediments in their drainage ditches, soil and groundwater (TAMS, August 1996). The Roth Brothers drainage ditch, which runs along their eastern property line, discharges to Ley Creek South Branch approximately 1,000 ft downstream of the Oberdorfer ditch. This would suggest that lead contamination in the Roth Brothers drainage ditch could not impact the sediments of the creek adjacent to the Oberdorfer site. However, as shown in Figure 2 of the Roth Brothers Site Summary Report (TAMS, August 1996), a former Roth Brothers drainage ditch appears to have drained toward the Oberdorfer property near the northern edge of Oberdorfer's "Old Disposal Area" (see Figure 2 herein) and likely merged with the Oberdorfer ditch. It thus appears that this ditch possibly served both Oberdorfer and Roth Brothers during an earlier period. Sediment data were not provided for this ditch.

At location L-22, which is downstream of Oberdorfer Industries, at the mouth of the Roth Brothers ditch, sediments were found to be severely contaminated by copper, lead (429 mg/kg), silver and zinc, and moderately contaminated by cadmium, chromium, mercury and nickel. Location L-28, the most downstream location, is moderately contaminated by copper, chromium, iron, and nickel.

Levels of risk for aluminum, which increases dramatically downstream of Oberdorfer Industries, are not included in NYSDEC's "Technical Guidance for Screening Contaminated Sediments" (1993). Aluminum concentrations increase from 4,470 to 13,100 to 25,900 mg/kg at locations L-24, L-22, and L-28, respectively. Increases of inorganics in sediments downstream may be due to remobilization of metals in sediments and surface water, or additional inputs to Ley Creek South Branch downstream of Oberdorfer.

Except for location L-22, all PCB Aroclors at each station were either not detected or were equal to or less than 180 µg/kg (ppb). At location L-22 (mouth of Roth Brothers ditch), Aroclor 1242 and Aroclor 1254 were detected at concentrations of 1,900 and 2,000 µg/kg (or 1.9 and 2.0 ppm), respectively. Since total organic carbon (TOC) concentration at L-22 was 28,700 mg/kg or 2.87%, the organic-carbon normalized Aroclor 1242 and 1254 concentrations at L-22 would be 66.2 and 69.7 µg/gmOC, respectively. The PCB Aroclor concentrations at this location were well above the effects range-moderate (ER-M) threshold concentration of 400 µg/kg (total PCBs) as well as the organic-carbon normalized sediment criteria for wildlife bioaccumulation of 1.4 µg/gmOC (total PCB), as presented by NYSDEC (1993). Concentrations of Aroclors 1242 and 1254 were above the effects range-low (ER-L) threshold concentration of 50 µg/kg at locations L-24, L-25, and L-26. Near Oberdorfer, at location L-24, concentrations of Aroclor 1242 and 1254 were 97 and 180 µg/kg, respectively. Thus, the elevated concentrations of PCBs at L-22 likely originated from the Roth Brothers site.

Most of the volatile organic and semivolatile organic compounds were not detected in the sediments. However, SVOCs that were detected, including mostly polycyclic aromatic hydrocarbons (PAHs), such as acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, chrysene, fluoranthene, fluorene, phenanthrene, and pyrene, generally increased in concentration in the upstream direction. For example, concentrations of benzo(a)pyrene, one of the most toxic PAHs, range from 7,600 µg/kg

adjacent to Oberdorfer (L-25) to 20,000 µg/kg, approximately one mile upstream of Oberdorder (L-27), and concentrations downstream of the site range from 54 to 4,000 µg/kg. Thus, a source of PAHs exists upstream of Oberdorfer.

Surface Water

Surface water in the South Branch of Ley Creek was sampled at two locations: L-23 which is near the northern border of the Oberdorfer site, 30 feet upstream of the Rupp Bridge near the Oberdorfer ditch shown in Figure 2; and L-21, which is 25 feet downstream of the Roth Brothers south ditch. This portion of Ley Creek South Branch is a Class C waterbody, as per 6 NYCRR Part 895. Table 2 displays the inorganics which exceeded NYSDEC surface water standards pursuant to 6 NYCRR Part 703.5. Lead is also shown, since it is a pollutant of concern for the adjacent Roth Brothers facility, although it did not exceed surface water quality standards for this sample event. PCBs, semivolatile organics, and volatile organics were not detected in surface water at either location. Surface water was not sampled upstream of Oberdorfer.

**Table 2: Concentrations of Metals of Concern in Surface Water of Ley Creek South Branch, NYSDEC Sampling, November 1996**

| | NYSDEC Class C Surface Water Standard (µg/L) | L-23 (µg/L) | L-21 (µg/L) |
|---|---|---|---|
| Approximate location in relation to Oberdorfer | | 30 feet upstream of the Rupp Bridge near Oberdorfer | 25 feet downstream of the Roth Brothers South Ditch |
| Aluminum | 100 | 166 J | 264 |
| Iron | 300 | 595 | 582 |
| Lead | 13 (b) | 2.7 | 3.6 |

Notes: a. J=Estimated value
b. Based on hardness of 300 mg/L, as measured in the North Branch of Ley Creek
c. For complete results, see Appendix A

### 4.2.2 Migration Potential of Contaminants

Based on the limited analytical data and information presented in the two companies' responses, substances of concern include aluminum (released to the atmosphere and to on-site soils) and oil and grease (regularly released in excessive quantities to the municipal sewer system). The oil and greases in the combined sanitary/industrial sewage are likely partially removed from the wastewater prior to entering Onondaga Lake during preliminary and primary treatment operations at the Metropolitan Syracuse Wastewater Treatment Plant. Also, from the recent DMR data, it appears that the SPDES-permitted discharges from the site to Ley Creek are not current or recent sources of contamination to the lake system.

Extraction procedure (EP) or TCLP tests on soil samples would indicate the leaching potential of contaminants from soils and wastes to water and groundwater. Analyses of foundry sand samples collected in 1981 and 1991 (see Section 2) indicated that the material is non-hazardous with a minor potential for transport of contaminants (including aluminum) from soil to groundwater. TCLP analyses were not performed on the two soil samples collected from the on-site disposal areas in 1991.

Data from NYSDEC's recent (November 1996) sediment sampling of the South Branch of Ley Creek suggests sources of aluminum and lead from the Oberdorfer/B&K Metals site and/or the Roth Brothers site. It should be noted that sampling has been more extensive and documented lead contamination has been more severe at the Roth Brothers site, including elevated concentrations of lead (214 to 7,600 mg/kg) in drainage ditches on their property (TAMS, 1996). However, sampling of the Oberdorfer drainage ditches was not conducted.

## 5.0 POTENTIAL FOR ADVERSE IMPACTS TO LAKE SYSTEM DUE TO A RELEASE OR THREAT OF RELEASE

### 5.1 Hazardous Substance Characteristics

Based on operations at the Oberdorfer/B&K Metals site and an elevated concentration of aluminum in the foundry core sands on site, aluminum is considered a substance of concern and represents a potential adverse impact to the lake system. Because of the limited analytical data provided for other contaminants such as PCBs and mercury, a determination as to whether or not these contaminants are substances of concern can not be made. In addition, lead is also considered a substance of concern based on elevated concentrations in sediments of the creek adjacent to the site, as sampled by NYSDEC in 1996. It should be noted that lead is a significant parameter of concern at the adjacent Roth Brothers site, and the relative contribution of lead contamination from the two sites to the creek has not been estimated.

Standards/Criteria

The New York State surface water standard for aluminum (ionic) is 100 µg/L for Class C waters (6 NYCRR 703.5). This standard is aquatic based and was established to allow fish propagation and survival based on the threshold for chronic toxic effects important to propagation of the test species (6 NYCRR 702.10). The New York State effluent standard for aluminum is 2,000 µg/L for discharge to Class GA groundwater (6 NYCRR 703.6). No additional standards, criteria, or guidance values have been identified. As previously stated, limited groundwater data and no surface water data were provided by the companies. For lead, based on a hardness of 300 mg/L, as measured in the North Branch of Ley Creek, the Class C surface water standard would be 13 µg/L. For lead in sediments, the Severe Effects Level concentration is 110 mg/kg.

Mobility

Limited data are available on the environmental fate/mobility of aluminum in USEPA's Hazardous Substances Data Bank (USEPA, 1996a). Based on analyses of leachate from soil samples, dissolved aluminum concentrations are significantly correlated with the organic aluminum content of the soil sample. Also, mobility of aluminum in soils is significantly reduced with elevated soil solution pH values.

Lead mobility in the environment is governed by a number of environmental conditions such as pH, oxidation state, and water hardness. Elemental lead (metallic lead) may also have been present. However, natural weathering is ultimately expected to oxidize any elemental lead. Lead mobility in oxidized and elemental form is expected to be controlled by lead-bearing soil particle movement. As a result, site lead, if present, will be associated with soil particles and lead mobility will, in part, be governed by the same processes responsible for soil movement, i.e., surface water flow, particle size and depositional environment. Once deposited on the lake/creek bottom, there exists the potential for reduction and remobilization of lead from the reducing sediments to the overlying waters.

Toxicity

Inhalation of aluminum powder or dust, not generally considered an industrial poison, has been reported to cause pulmonary fibrosis (Lewis, R.J., 1992). A review of relevant USEPA databases revealed that there is no data on toxicity. A risk assessment for aluminum is under review by a USEPA work group (USEPA, 1996b). No additional data are available on the toxicity of aluminum in USEPA's Hazardous Substance Data Bank (USEPA, 1996a).

Lead may adversely affect survival, growth, reproduction, development, and metabolism of most species under controlled conditions, but its effects are substantially modified by physical,

chemical and biological variables (Eisler, 1988). In general, organo-lead compounds are more toxic than inorganic lead compounds, food chain biomagnification of lead is negligible, and immature organisms are most susceptible to toxicity. Lead is classified as a probable human carcinogen, based on rat and mouse studies with dietary and subcutaneous exposure to several soluble lead salts (USEPA, 1995). In humans, ingestion of lead leads to symptoms such as loss of appetite, anemia, malaise, insomnia, headaches, irritability, muscle and joint pains, tremors, hallucination and distorted perceptions, muscle weakness, gastritis and liver changes. Lead is also toxic to all phyla of aquatic biota, but its toxic action is modified by species and physiological state. Wong et al. (1978) reported that only soluble waterborne lead is toxic to aquatic biota, and that free cationic forms are more toxic than complexed forms.

Persistence

No data are available on the environmental fate/persistence of aluminum in USEPA's Hazardous Substance Data Bank (USEPA, 1996a).

Lead is persistent in both water and sediment. Since lead is an element, it cannot be broken down at all and its concentration in environmental media is governed solely by dilution mechanisms. In the environment, lead can be transformed from inorganic to organic forms, affecting its respective toxicity, but ultimately only dilution or removal affect the presence of this element.

Bioaccumulation

Limited data are available on the environmental fate/bioaccumulation of aluminum in USEPA's Hazardous Substance Data Bank (USEPA, 1996a). An interactions experiment was performed by exposing groups of Atlantic salmon fry to water containing aluminum and silicic acid. Aluminum concentrations in the tank were at acutely toxic levels (6-7 µmol/L or

about 170 µg/L) except for the control sample (0.85 µmol/L or about 20 µg/L). Aluminum levels in fish ranged from 0.44 µmol/gm (about 12 µg/gm-dry, ppm) in the control sample to 2.49 µmol/gm (67 µg/gm-dry) in the sample with a silicon:aluminum ratio of 0.1 (USEPA, 1996a). Also, the accumulation of aluminum by fish decreased sharply as the exchangeable silicon:aluminum ratio increased.

Lead tends to bioaccumulate/bioconcentrate within living organisms. However, there is no convincing evidence that it is biomagnified through food chains (Wong et al., 1978; USEPA, 1979; Settle and Patterson, 1980). In surface water, lead concentrations are usually highest in benthic organisms and algae and lowest in upper trophic level predators.

## 5.2 Quantity of Substance

Based on Oberdorfer's estimate of 60 tons per week of foundry core sands disposed on site and the concentration of aluminum in a sand sample (2,100 mg/kg), an estimate of the mass of aluminum disposed on site and later shipped to a landfill is about 250 lbs/week or about 13,000 lb/year. According to Oberdorfer's 1991 TRI form, approximately 29,000 lbs/year of aluminum were released to land on site (Oberdorfer, p. 000069). This latter quantity likely consists of waste sands and more-concentrated dusts.

Estimates of the mass of contaminants in on-site soils were not provided by either company and can not be made based on the limited data included in the responses.

## 5.3 Levels of Contaminants

As previously described, limited analytical data were provided for waste sand samples, soil and groundwater samples, and discharge wastewater. A summary of available concentration data is presented in Sections 2 and 4. In summary, recent (1993) concentrations of aluminum

in groundwater ranged from 29 mg/L to 140 mg/L (one sample per well). Aluminum was detected in foundry core sands stored on-site at a concentration of 2,100 mg/kg. Lead was not detected in the waste sand samples. Lead was detected in on-site soils at concentrations of 3.3 mg/kg and 11 mg/kg. Surface water and sediment data were not provided by either company.

As discussed in Section 4.2.1, sediment and surface water in the South Branch of Ley Creek were sampled by NYSDEC in 1996. Aluminum concentrations in surface water adjacent to and downstream of the site were 166 µg/L and 264 µg/L, respectively, greater than the standard of 100 µg/L. Lead concentrations were 2.7 and 3.6 µg/L, less than the estimated standard of 13 µg/L. In sediments adjacent to and downstream of the site, aluminum ranged from 4,470 to 25,900 mg/kg (risk level not included in NYSDEC, 1993), and lead ranged from 153 to 1,170 mg/kg (Severe Effect Level of 110 mg/kg).

## 5.4 Impacts on Special Status Areas

The Oberdorfer site is not situated in an area where direct future adverse impact to protected habitats or streams is likely to occur. Ley Creek near the site is currently classified as a Class C waterbody (6 NYCRR Part 895.4). As stated in the SPDES permit, Ley Creek was formerly a Class D waterbody. Ley Creek is not considered a "protected stream" in New York State; protected streams include AA, AA(t), A, A(t), B, B(t), or C(t) class waters (6 NYCRR Part 608.1). The nearest State freshwater wetland is approximately one mile northwest of the site and north of Ley Creek.

## 6.0 SUMMARY OF CONCERNS

Based on the data and information provided by both Oberdorfer and B&K Metals, as well as the recent sediment and surface water data provided by NYSDEC, the following concerns are noted:

- Oberdorfer continues to discharge elevated levels of oils and grease into the municipal sewer at concentrations greater than the limitation established by Onondaga County;

- Process waste materials (foundry core sands with binders and additives and baghouse dusts) are stored directly on site soils prior to ultimate off-site disposal. Contaminants in this surficial material can be transported to the South Branch of Ley Creek by erosion due to surface water runoff during rain/snowmelt events and by dusting during dry, windy conditions;

- The delisting of the site by NYSDEC was based on two soil samples collected in 1991. It is recommended that additional soil sampling be performed to confirm the current status;

- Concentrations of aluminum in surface water of Ley Creek South Branch adjacent to and downstream of the site exceed the New York State Class C standard of 100 µg/L, as sampled by NYSDEC in 1996. It is likely that the Oberdorfer site has been a source of aluminum to the creek; and

- NYSDEC's recent sediment sampling suggests additional sources of lead to the South Branch of Ley Creek from the Oberdorfer/B&K Metals site and/or the nearby Roth Brothers Smelting Corporation site. It is possible that lead contamination from

the Roth Brothers site migrated off site to the Oberdorfer site and then to the creek. Possible historic transport methods from Roth to Oberdorfer include surface water transport via the "Former Drainage Ditch" identified by Roth Brothers (TAMS, 1996), surface soil transport, and groundwater migration.

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# Site Location: Oberdorfer Industries Thompson Road Facility

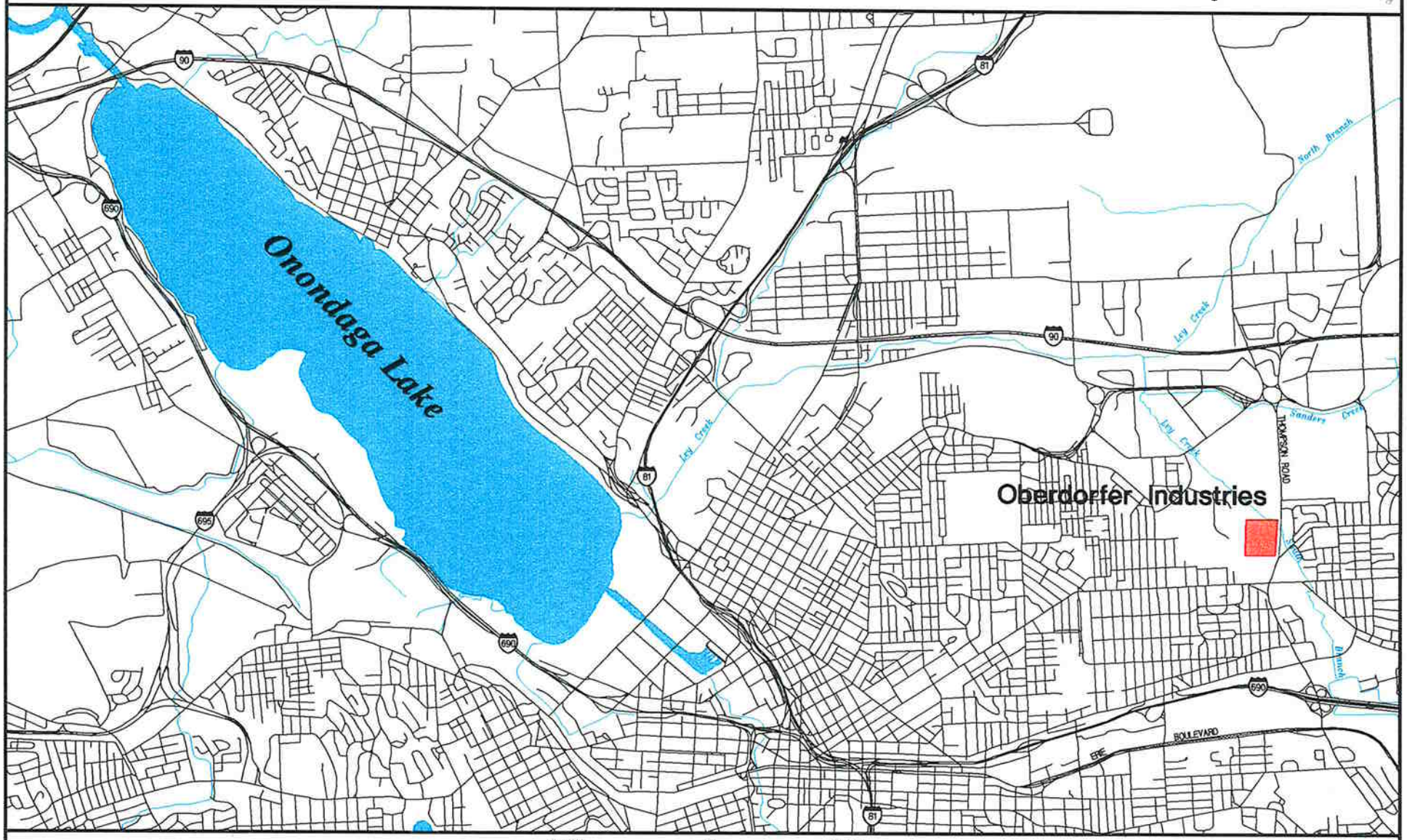
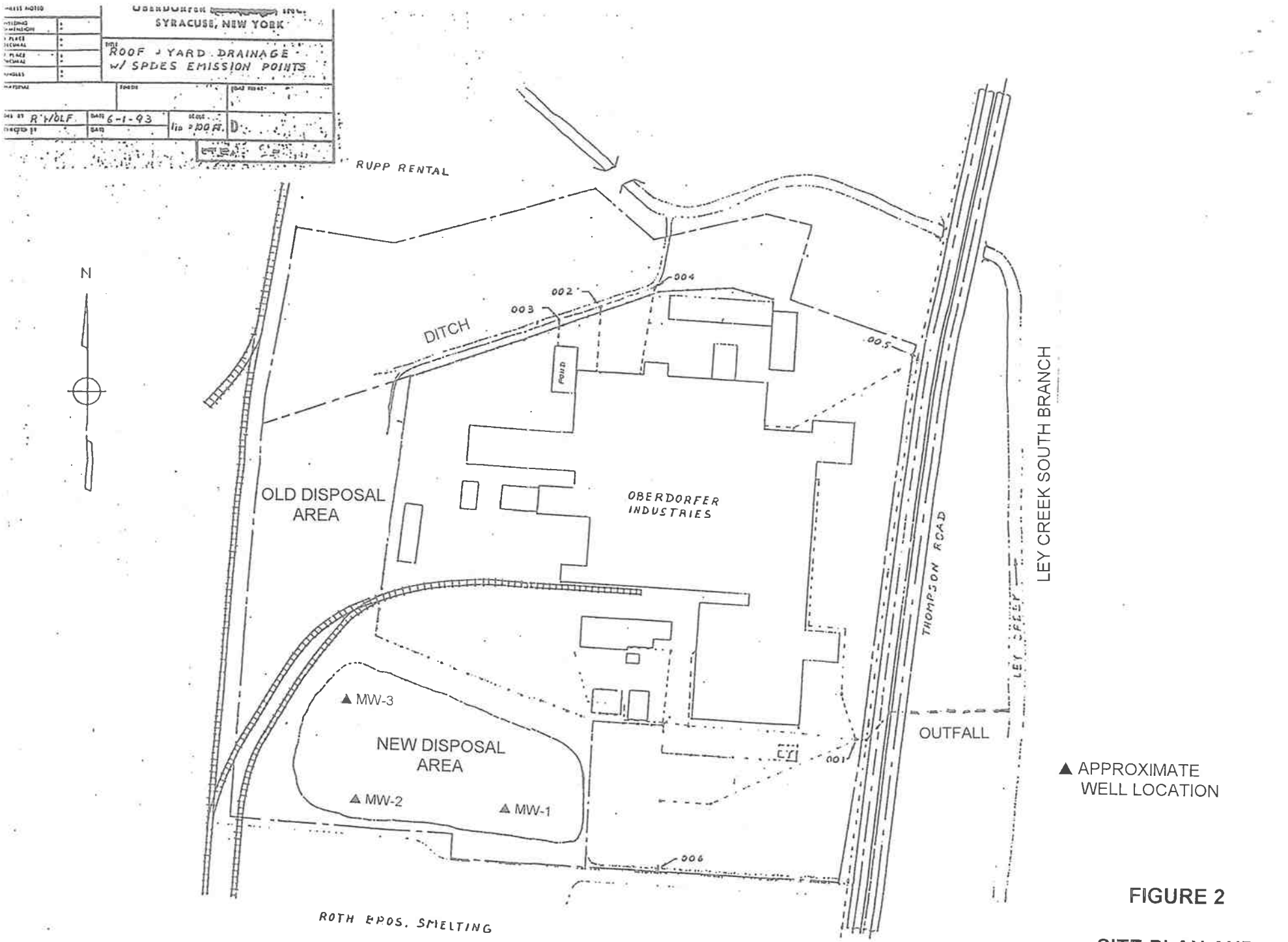



Figure 1

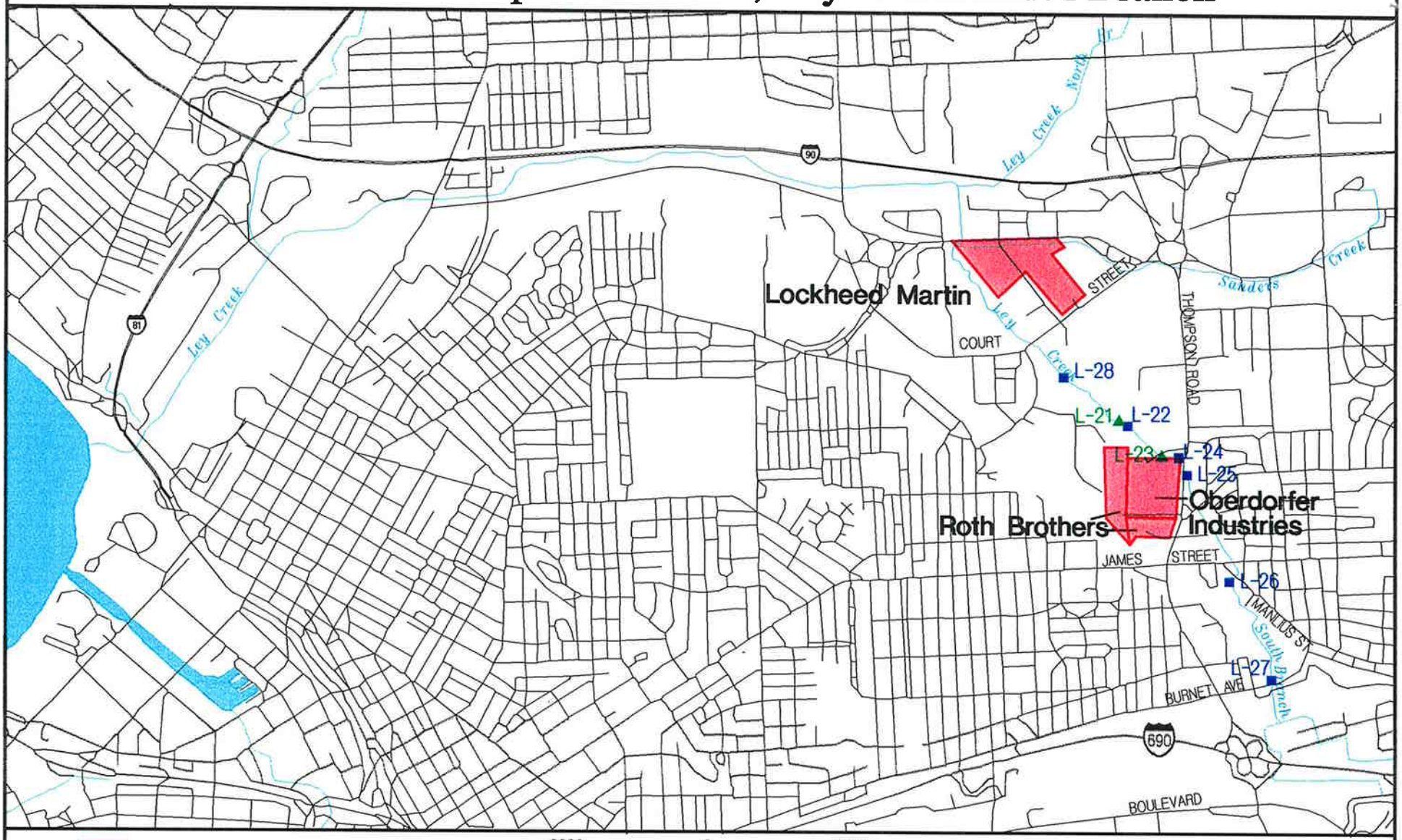



Source: Oberdorfer Industries, Inc. (June 24, 1996)

**FIGURE 2**

**SITE PLAN AND OUTFALL LOCATIONS**

# NYSDEC 1996 Sample Locations, Ley Creek South Branch




104(e) Site Location

L-28 Sediment Sample

L-21 Surface Water Sample

3000 0 3000
Scale in Feet

1000 0 1000
Scale in Meters

N

TAMS

Figure 3

# APPENDIX A

## Ley Creek South Branch Sediment and Surface Water Data

Table A1: Ley Creek South Branch, Sediment Samples, Inorganics Data, November 1996 (mg/kg or ppm)

| Parameter | L-28 | | L-22 | | L-24 | | L-25 | | L-26 | | L-27 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Conc. | Qualifier | Conc. | Qualifier | Conc. | Qualifier | Conc. | Qualifier | Conc. | Qualifier | Conc. | Qualifier |
| Aluminum | 25900 | | 13100 | | 4470 | | 6860 | | 5270 | | 3530 | |
| Antimony | 0.82 | UNJ | 3.3 | BNJ | 18.7 | NJ | 1 | UNJ | 0.85 | UNJ | 0.82 | UNJ |
| Arsenic | 4.9 | J | 10.3 | | 6.8 | | 6 | | 3.8 | | 3.6 | |
| Barium | 197 | | 127 | | 101 | | 81.8 | | 316 | | 196 | |
| Beryllium | 1.2 | B | 0.64 | B | 0.27 | B | 0.38 | B | 0.32 | B | 0.24 | B |
| Cadmium | 0.11 | B | 5.9 | | 0.89 | B | 2.1 | | 1.2 | B | 1.5 | |
| Calcium | 85400 | | 72000 | | 23000 | | 85600 | | 143000 | | 193000 | |
| Chromium | 38.9 | NJ | 42.2 | | 13.1 | | 41.6 | | 27.2 | | 20.5 | |
| Cobalt | 15.8 | J | 7.2 | B | 7.3 | B | 6.9 | B | 6.1 | B | 3.8 | B |
| Copper | 28.8 | | 423 | NJ | 118 | NJ | 197 | NJ | 42 | NJ | 52.4 | NJ |
| Cyanide | 0.76 | U | 0.86 | U | 0.74 | U | 0.93 | U | 0.79 | U | 0.76 | U |
| Iron | 36100 | | 16400 | | 25800 | | 15000 | | 11300 | | 10100 | |
| Lead | 11.1 | ENJ | 429 | J | 1170 | J | 153 | J | 77.3 | J | 134 | J |
| Magnesium | 17300 | | 11700 | | 4160 | | 14200 | | 18600 | | 18600 | |
| Manganese | 882 | NR | 423 | | 268 | | 387 | | 307 | | 254 | |
| Mercury | 0.08 | B | 0.19 | | 0.11 | B | 0.19 | | 0.12 | B | 0.1 | B |
| Nickel | 35 | ENJ | 38.6 | | 19.9 | | 37.3 | | 18.2 | | 14.8 | |
| Potassium | 8430 | EJ | 1780 | | 599 | B | 1060 | B | 1470 | B | 1380 | B |
| Selenium | 0.43 | U | 1 | B | 2.2 | | 0.52 | U | 0.6 | B | 0.44 | B |
| Silver | 0.34 | B | 9.3 | | 0.59 | B | 2.2 | B | 0.13 | B | 0.17 | B |
| Sodium | 1000 | BE | 356 | B | 233 | B | 706 | B | 409 | B | 495 | B |
| Thallium | 0.73 | B | 0.65 | U | 0.56 | U | 0.71 | U | 0.6 | U | 0.58 | U |
| Vanadium | 50.3 | | 26.5 | | 18.2 | | 22 | | 28.2 | | 18 | |
| Zinc | 78.7 | EJ | 781 | EJ | 155 | EJ | 383 | EJ | 811 | EJ | 206 | EJ |

Table A2: Ley Creek South Branch, Sediment Samples, PCB Data, November 1996 (ug/kg or ppb)

| Parameter | L-28 | | L-22 | | L-24 | | L-25 | | L-26 | | L-27 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Conc. | Qualifier | Conc. | Qualifier | Conc. | Qualifier | Conc. | Qualifier | Conc. | Qualifier | Conc. | Qualifier |
| Aroclor-1016 | 50 | U | 56 | X | 49 | X | 61 | X | 52 | X | 50 | UJ |
| Aroclor-1221 | 100 | U | 110 | U | 99 | U | 120 | U | 100 | U | 100 | UJ |
| Aroclor-1232 | 50 | U | 56 | U | 49 | U | 61 | U | 52 | U | 50 | UJ |
| Aroclor-1242 | 50 | U | 1900 | D | 97 | | 98 | | 66 | | 50 | UJ |
| Aroclor-1248 | 50 | U | 56 | U | 49 | U | 61 | U | 52 | U | 50 | UJ |
| Aroclor-1254 | 13 | JP | 2000 | D | 180 | | 180 | | 96 | | 100 | J |
| Aroclor-1260 | 12 | J | 860 | J | 37 | J | 83 | | 41 | J | 38 | J |

Table A3: Ley Creek South Branch, Sediment Samples, Semivolatile Organic Data, November 1996 (ug/kg or ppb)



| Parameter | L-28 | | L-22 | | L-24 | | L-25 | | L-26 | | L-27 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Conc. | Qualifier | Conc. | Qualifier | Conc. | Qualifier | Conc. | Qualifier | Conc. | Qualifier | Conc. | Qualifier |
| 1,2,4-Trichlorobenzene | 510 | U | 570 | U | 490 | U | 620 | U | 530 | U | 510 | U |
| 1,2-Dichlorobenzene | 510 | U | 58 | J | 490 | U | 620 | U | 120 | J | 510 | U |
| 1,3-Dichlorobenzene | 510 | U | 570 | U | 490 | U | 620 | U | 530 | U | 510 | U |
| 1,4-Dichlorobenzene | 510 | U | 570 | U | 490 | U | 620 | U | 530 | U | 510 | U |
| 2,2'-Oxybis(1-Chloropropane) | 510 | U | 570 | U | 490 | U | 620 | U | 530 | U | 510 | U |
| 2,4,5-Trichlorophenol | 1300 | U | 1400 | U | 1200 | U | 1500 | U | 1300 | U | 1300 | U |
| 2,4,6-Trichlorophenol | 510 | U | 570 | U | 490 | U | 620 | U | 530 | U | 510 | U |
| 2,4-Dichlorophenol | 510 | U | 570 | U | 490 | U | 620 | U | 530 | U | 510 | U |
| 2,4-Dimethylphenol | 510 | U | 570 | U | 490 | U | 620 | U | 530 | U | 510 | U |
| 2,4-Dinitrophenol | 1300 | UJ | 1400 | UJ | 1200 | UJ | 1500 | UJ | 1300 | UJ | 1300 | UJ |
| 2,4-Dinitrotoluene | 510 | U | 570 | U | 490 | U | 620 | U | 530 | U | 510 | U |
| 2,6-Dinitrotoluene | 510 | U | 570 | U | 490 | U | 620 | U | 530 | U | 510 | U |
| 2-Chloronaphthalene | 510 | U | 570 | U | 490 | U | 620 | U | 530 | U | 510 | U |
| 2-Chlorophenol | 510 | U | 570 | U | 490 | U | 620 | U | 530 | U | 510 | U |
| 2-Methylnaphthalene | 510 | U | 440 | J | 50 | J | 220 | J | 270 | J | 440 | J |
| 2-Methylphenol | 510 | U | 570 | U | 490 | U | 620 | U | 530 | U | 510 | U |
| 2-Nitroanailine | 1300 | U | 1400 | U | 1200 | U | 1500 | U | 1300 | U | 1300 | U |
| 2-Nitrophenol | 510 | U | 570 | U | 490 | U | 620 | U | 530 | U | 510 | U |
| 3,3-Dichlorobenzidine | 510 | U | 570 | U | 490 | U | 620 | U | 530 | U | 510 | U |
| 3-Nitroanailine | 1300 | U | 1400 | U | 1200 | U | 1500 | U | 1300 | U | 1300 | U |
| 4,6-Dinitro-2-Methylphenol | 1300 | UJ | 1400 | UJ | 1200 | UJ | 1500 | UJ | 1300 | UJ | 1300 | UJ |
| 4-Bromophenyl-Phenyl Ether | 510 | U | 570 | U | 490 | U | 620 | U | 530 | U | 510 | U |
| 4-Chloro3-Methylphenol | 510 | U | 570 | U | 490 | U | 620 | U | 530 | U | 510 | U |
| 4-Chloroaniline | 510 | UJ | 570 | UJ | 490 | UJ | 620 | UJ | 530 | UJ | 510 | UJ |
| 4-Chlorophenyl-Phenyl Ether | 510 | U | 570 | U | 490 | U | 620 | U | 530 | U | 510 | U |
| 4-Methylphenol | 510 | U | 180 | J | 490 | U | 120 | J | 71 | J | 130 | J |
| 4-Nitroaniline | 1300 | U | 1400 | U | 1200 | U | 1500 | U | 1300 | U | 1300 | U |
| 4-Nitrophenol | 1300 | U | 1400 | U | 1200 | U | 1500 | U | 1300 | U | 1300 | U |
| Acenaphthene | 510 | U | 930 | | 110 | J | 520 | J | 1000 | | 2200 | |
| Acenaphthylene | 510 | U | 600 | | 120 | J | 650 | | 740 | | 1500 | |
| Anthracene | 510 | U | 1800 | | 310 | J | 1900 | | 2800 | | 7600 | JD |

| Parameter | L-28 | | L-22 | | L-24 | | L-25 | | L-26 | | L-27 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Conc. | Qualifier | Conc. | Qualifier | Conc. | Qualifier | Conc. | Qualifier | Conc. | Qualifier | Conc. | Qualifier |
| Benzo(A)Anthracene | 61 | J | 3500 | D | 990 | | 7700 | D | 12000 | D | 22000 | D |
| Benzo(A)Pyrene | 54 | J | 4000 | DJ | 520 | | 7600 | D | 12000 | DJ | 20000 | D |
| Benzo(B)Fluoranthene | 110 | J | 3600 | DJ | 820 | | 6100 | D | 11000 | DJ | 17000 | D |
| Benzo(G,H,I)Perylene | 510 | U | 1800 | J | 960 | | 2200 | | 2300 | J | 2900 | |
| Benzo(K)Fluoranthene | 80 | J | 3800 | DJ | 970 | | 7200 | D | 9100 | DJ | 510 | U |
| Bis(2-Chloroethoxy)Methane | 510 | U | 570 | U | 490 | U | 620 | U | 530 | U | 510 | U |
| Bis(2-Chloroethyl) Ether | 510 | U | 570 | U | 490 | U | 620 | U | 530 | U | 510 | U |
| Bis(2-Ethylhexyl)Phthalate | 360 | J | 1300 | | 510 | | 1700 | | 12000 | D | 3300 | |
| Butylbenzylphthalate | 510 | U | 570 | U | 150 | J | 620 | U | 530 | U | 34000 | D |
| Carbazole | 510 | U | 870 | | 190 | J | 810 | | 1200 | | 510 | U |
| Chrysene | 97 | J | 4300 | D | 1100 | | 9100 | D | 14000 | D | 22000 | D |
| Di-N-Butylphthalate | 510 | U | 570 | U | 490 | U | 620 | U | 530 | U | 510 | U |
| Di-N-Octylphthalate | 110 | J | 570 | UJ | 490 | U | 620 | U | 530 | UJ | 510 | U |
| Dibenz(A,H)Anthracene | 510 | U | 570 | UJ | 490 | U | 620 | U | 530 | UJ | 510 | U |
| Dibenzofuran | 510 | U | 830 | | 78 | J | 410 | J | 730 | | 1200 | |
| Diethylphthalate | 510 | U | 570 | U | 490 | U | 620 | U | 530 | U | 510 | U |
| Dimethylphthalate | 510 | U | 570 | U | 490 | U | 620 | U | 530 | U | 510 | U |
| Fluoranthene | 190 | J | 8600 | D | 1900 | | 14000 | D | 23000 | D | 45000 | D |
| Fluorene | 510 | U | 1100 | | 170 | J | 870 | | 1500 | | 2700 | |
| Hexachlorobenzene | 510 | U | 570 | U | 490 | U | 620 | U | 530 | U | 510 | U |
| Hexachlorobutadiene | 510 | U | 570 | U | 490 | U | 620 | U | 530 | U | 510 | U |
| Hexachlorocyclopentadiene | 510 | U | 570 | U | 490 | U | 620 | U | 530 | U | 510 | U |
| Hexachloroethane | 510 | U | 570 | U | 490 | U | 620 | U | 530 | U | 510 | U |
| Indeno(1,2,3-Cd)Pyrene | 510 | U | 480 | J | 870 | | 490 | J | 500 | J | 700 | |
| Isophorone | 510 | U | 570 | U | 490 | U | 620 | U | 530 | U | 510 | U |
| N-Nitroso-Di-N-Propylamine | 510 | U | 570 | U | 490 | U | 620 | U | 530 | U | 510 | U |
| N-Nitrosodiphenylamine(1) | 510 | U | 570 | U | 490 | U | 620 | U | 530 | U | 510 | U |
| Naphthalene | 510 | U | 780 | | 54 | J | 290 | J | 420 | J | 550 | |
| Nitrobenzene | 510 | U | 570 | U | 490 | U | 620 | U | 530 | U | 510 | U |
| Pentachlorophenol | 1300 | U | 1400 | U | 1200 | U | 1500 | U | 1300 | U | 1300 | U |
| Phenanthrene | 120 | J | 5700 | D | 1300 | | 8400 | D | 16000 | D | 27000 | E |
| Phenol | 510 | U | 570 | U | 490 | U | 620 | U | 530 | U | 510 | U |
| Pyrene | 150 | J | 8400 | D | 2000 | | 14000 | D | 23000 | D | 40000 | D |

Table A4: Ley Creek South Branch, Sediment Samples, Volatile Organic Data, November 1996 (ug/kg or ppb)

| Parameter | L-28 | | L-22 | | L-24 | | L-25 | | L-26 | | L-27 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Conc. | Qualifier | Conc. | Qualifier | Conc. | Qualifier | Conc. | Qualifier | Conc. | Qualifier | Conc. | Qualifier |
| 1,1,1-Trichloroethane | 15 | U | 17 | U | 15 | U | 18 | U | 14 | U | 15 | U |
| 1,1,2,2-Tetrachloroethane | 15 | U | 17 | U | 15 | U | 18 | U | 14 | U | 15 | UJ |
| 1,1,2-Trichloroethane | 15 | U | 17 | U | 15 | U | 18 | U | 14 | U | 15 | U |
| 1,1-Dichloroethane | 15 | U | 17 | UJ | 15 | U | 18 | UJ | 14 | U | 15 | U |
| 1,1-Dichloroethene | 15 | U | 17 | U | 15 | U | 18 | U | 14 | U | 15 | U |
| 1,2-Dichloroethane | 15 | U | 17 | U | 15 | U | 18 | U | 14 | U | 15 | U |
| 1,2-Dichloroethene (Total) | 15 | U | 17 | U | 15 | U | 18 | U | 14 | U | 15 | U |
| 1,2-Dichloropropane | 15 | U | 17 | U | 15 | U | 18 | U | 14 | U | 15 | U |
| 2-Butanone | 15 | U | 17 | U | 15 | U | 18 | U | 14 | U | 12 | J |
| 2-Hexanone | 15 | U | 17 | U | 15 | U | 18 | U | 14 | U | 15 | UJ |
| 4-Methyl-2-Pentanone | 15 | U | 17 | U | 15 | U | 18 | U | 14 | U | 15 | U |
| Acetone | 17 | J | 33 | J | 15 | U | 37 | J | 14 | U | 37 | |
| Benzene | 15 | U | 17 | U | 15 | U | 18 | U | 14 | U | 15 | U |
| Bromodichloromethane | 15 | U | 17 | U | 15 | U | 18 | U | 14 | U | 15 | U |
| Bromoform | 15 | U | 17 | U | 15 | U | 18 | U | 14 | U | 15 | U |
| Bromomethane | 15 | U | 17 | U | 15 | U | 18 | U | 14 | U | 15 | U |
| Carbon Disulfide | 15 | U | 9 | J | 15 | U | 18 | U | 2 | J | 11 | J |
| Carbon Tetrachloride | 15 | U | 17 | U | 15 | U | 18 | U | 14 | U | 15 | U |
| Chlorobenzene | 3 | J | 17 | U | 15 | U | 18 | U | 14 | U | 15 | UJ |
| Chloroethane | 15 | U | 17 | U | 15 | U | 18 | U | 14 | U | 15 | U |
| Chloroform | 15 | U | 17 | U | 15 | U | 18 | U | 14 | U | 15 | U |
| Chloromethane | 15 | U | 17 | U | 15 | U | 18 | U | 14 | U | 15 | U |
| Cis-1,3-Dichloropropene | 15 | U | 17 | U | 15 | U | 18 | U | 14 | U | 15 | U |
| Dibromochloromethane | 15 | U | 17 | U | 15 | U | 18 | U | 14 | U | 15 | U |
| Ethylbenzene | 15 | U | 17 | U | 15 | U | 18 | U | 14 | U | 15 | UJ |
| Methylene Chloride | 15 | U | 17 | U | 15 | U | 18 | U | 14 | U | 15 | U |
| Styrene | 15 | U | 17 | U | 15 | U | 18 | U | 14 | U | 15 | UJ |
| Tetrachloroethene | 15 | U | 17 | U | 15 | U | 18 | U | 14 | U | 15 | UJ |
| Toluene | 15 | U | 17 | U | 15 | U | 18 | U | 14 | U | 15 | UJ |
| Trans-1,3-Dichloropropene | 15 | U | 17 | U | 15 | U | 18 | U | 14 | U | 15 | U |
| Trichloroethene | 15 | U | 17 | U | 15 | U | 18 | U | 14 | U | 15 | U |
| Vinyl Chloride | 15 | U | 17 | U | 15 | U | 18 | U | 14 | U | 15 | U |
| Xylene (Total) | 15 | U | 17 | U | 15 | U | 18 | U | 14 | U | 15 | UJ |

Table A5: Ley Creek South Branch, Surface Water Samples, Inorganics Data, November 1996 (ug/L or ppb)

| Parameter | L-21 | | L-23 | |
|---|---|---|---|---|
| | Concentration | Qualifier | Concentration | Qualifier |
| Aluminum | 264 | | 166 | B |
| Antimony | 2.7 | U | 2.7 | U |
| Arsenic | 1.5 | U | 1.5 | UJ |
| Barium | 81.9 | B | 88.7 | B |
| Beryllium | 0.2 | U | 0.2 | U |
| Cadmium | 0.2 | U | 0.2 | B |
| Calcium | 166000 | | 196000 | |
| Chromium | 1.6 | B | 2.8 | B |
| Cobalt | 1.4 | U | 1.4 | U |
| Copper | 9.8 | B | 6.7 | B |
| Cyanide | 10 | U | 10 | U |
| Iron | 582 | | 595 | |
| Lead | 3.6 | | 2.7 | B |
| Magnesium | 25700 | | 29200 | |
| Manganese | 129 | | 139 | |
| Mercury | 0.1 | U | 0.1 | U |
| Nickel | 5.6 | B | 7.2 | B |
| Potassium | 9380 | EJ | 9760 | EJ |
| Selenium | 1.4 | U | 1.4 | U |
| Silver | 0.4 | U | 1.2 | B |
| Sodium | 263000 | | 271000 | |
| Thallium | 2.5 | B | 1.9 | U |
| Vanadium | 1.6 | U | 1.6 | U |
| Zinc | 41.2 | R | 37.9 | R |

Table A6: Ley Creek South Branch, Surface Water Samples, PCB Data, November 1996 (ug/L or ppb)

| Parameter | L-21 | | L-23 | |
|---|---|---|---|---|
| | Concentration | Qualifier | Concentration | Qualifier |
| Aroclor-1016 | 1 | UJ | 1 | UJ |
| Aroclor-1221 | 2 | UJ | 2 | UJ |
| Aroclor-1232 | 1 | UJ | 1 | UJ |
| Aroclor-1242 | 1 | UJ | 1 | UJ |
| Aroclor-1248 | 1 | UJ | 1 | UJ |
| Aroclor-1254 | 1 | UJ | 1 | UJ |
| Aroclor-1260 | 1 | UJ | 1 | UJ |

Table A7: Ley Creek South Branch, Surface Water Samples, Semivolatile Organic Data, November 1996 (ug/L) 1/2

| Parameter | L-21 | | L-23 | |
|---|---|---|---|---|
| | Concentration | Qualifier | Concentration | Qualifier |
| 1,2,4-Trichlorobenzene | 10 | U | 10 | U |
| 1,2-Dichlorobenzene | 10 | U | 10 | U |
| 1,3-Dichlorobenzene | 10 | U | 10 | U |
| 1,4-Dichlorobenzene | 10 | U | 10 | U |
| 2,2'-Oxybis(1-Chloropropane) | 10 | U | 10 | U |
| 2,4,5-Trichlorophenol | 25 | U | 25 | U |
| 2,4,6-Trichlorophenol | 10 | U | 10 | U |
| 2,4-Dichlorophenol | 10 | U | 10 | U |
| 2,4-Dimethylphenol | 10 | U | 10 | U |
| 2,4-Dinitrophenol | 25 | U | 25 | U |
| 2,4-Dinitrotoluene | 10 | U | 10 | U |
| 2,6-Dinitrotoluene | 10 | U | 10 | U |
| 2-Chloronaphthalene | 10 | U | 10 | U |
| 2-Chlorophenol | 10 | U | 10 | U |
| 2-Methylnaphthalene | 10 | U | 10 | U |
| 2-Methylphenol | 10 | U | 10 | U |
| 2-Nitroanailine | 25 | U | 25 | U |
| 2-Nitrophenol | 10 | U | 10 | U |
| 3,3-Dichlorobenzidine | 10 | U | 10 | U |
| 3-Nitroanailine | 25 | U | 25 | U |
| 4,6-Dinitro-2-Methylphenol | 25 | U | 25 | U |
| 4-Bromophenyl-Phenyl Ether | 10 | U | 10 | U |
| 4-Chloro3-Methylphenol | 10 | U | 10 | U |
| 4-Chloroaniline | 10 | UJ | 10 | UJ |
| 4-Chlorophenyl-Phenyl Ether | 10 | U | 10 | U |
| 4-Methylphenol | 10 | U | 10 | U |
| 4-Nitroaniline | 25 | U | 25 | U |
| 4-Nitrophenol | 25 | U | 25 | U |
| Acenaphthene | 10 | U | 10 | U |
| Acenaphthylene | 10 | U | 10 | U |
| Anthracene | 10 | U | 10 | U |
| Benzo(A)Anthracene | 10 | U | 10 | U |
| Benzo(A)Pyrene | 10 | U | 10 | U |
| Benzo(B)Fluoranthene | 10 | U | 10 | U |
| Benzo(G,H,I)Perylene | 10 | U | 10 | U |
| Benzo(K)Fluoranthene | 10 | U | 10 | U |
| Bis(2-Chloroethoxy)Methane | 10 | U | 10 | U |
| Bis(2-Chloroethyl) Ether | 10 | U | 10 | U |
| Bis(2-Ethylhexyl)Phthalate | 10 | U | 1 | J |
| Butylbenzylphthalate | 10 | U | 10 | U |
| Carbazole | 10 | U | 10 | U |
| Chrysene | 10 | U | 10 | U |

| Parameter | L-21 | | L-23 | |
|---|---|---|---|---|
| | Concentration | Qualifier | Concentration | Qualifier |
| Di-N-Butylphthalate | 10 | U | 10 | U |
| Di-N-Octylphthalate | 10 | U | 10 | U |
| Dibenz(A,H)Anthracene | 10 | U | 10 | U |
| Dibenzofuran | 10 | U | 10 | U |
| Diethylphthalate | 10 | U | 10 | U |
| Dimethylphthalate | 10 | U | 10 | U |
| Fluoranthene | 10 | U | 10 | U |
| Fluorene | 10 | U | 10 | U |
| Hexachlorobenzene | 10 | U | 10 | U |
| Hexachlorobutadiene | 10 | U | 10 | U |
| Hexachlorocyclopentadiene | 10 | U | 10 | U |
| Hexachloroethane | 10 | U | 10 | U |
| Indeno(1,2,3-Cd)Pyrene | 10 | U | 10 | U |
| Isophorone | 10 | U | 10 | U |
| N-Nitroso-Di-N-Propylamine | 10 | U | 10 | U |
| N-Nitrosodiphenylamine(1) | 10 | U | 10 | U |
| Naphthalene | 10 | U | 10 | U |
| Nitrobenzene | 10 | U | 10 | U |
| Pentachlorophenol | 25 | U | 25 | U |
| Phenanthrene | 10 | U | 10 | U |
| Phenol | 10 | U | 10 | U |
| Pyrene | 10 | U | 10 | U |

Table A8: Ley Creek South Branch, Surface Water Samples, Volatile Organic Data, November 1996 (ug/L or ppb)

| Parameter | L-21 | | L-23 | |
|---|---|---|---|---|
| | Concentration | Qualifier | Concentration | Qualifier |
| 1,1,1-Trichloroethane | 10 | U | 10 | U |
| 1,1,2,2-Tetrachloroethane | 10 | U | 10 | U |
| 1,1,2-Trichloroethane | 10 | U | 10 | U |
| 1,1-Dichloroethane | 10 | U | 10 | U |
| 1,1-Dichloroethene | 10 | U | 10 | U |
| 1,2-Dichloroethane | 10 | U | 10 | U |
| 1,2-Dichloroethene (Total) | 1 | J | 2 | J |
| 1,2-Dichloropropane | 10 | U | 10 | U |
| 2-Butanone | 10 | UJ | 10 | UJ |
| 2-Hexanone | 10 | U | 10 | U |
| 4-Methyl-2-Pentanone | 10 | UJ | 10 | UJ |
| Acetone | 10 | UJ | 10 | UJ |
| Benzene | 10 | U | 10 | U |
| Bromodichloromethane | 10 | U | 10 | U |
| Bromoform | 10 | U | 10 | U |
| Bromomethane | 10 | U | 10 | U |
| Carbon Disulfide | 10 | U | 10 | U |
| Carbon Tetrachloride | 10 | U | 10 | U |
| Chlorobenzene | 10 | U | 10 | U |
| Chloroethane | 10 | U | 10 | U |
| Chloroform | 10 | U | 10 | U |
| Chloromethane | 10 | UJ | 10 | UJ |
| Cis-1,3-Dichloropropene | 10 | U | 10 | U |
| Dibromochloromethane | 10 | U | 10 | U |
| Ethylbenzene | 10 | U | 10 | U |
| Methylene Chloride | 10 | U | 10 | U |
| Styrene | 10 | U | 10 | U |
| Tetrachloroethene | 10 | U | 10 | U |
| Toluene | 10 | U | 10 | U |
| Trans-1,3-Dichloropropene | 10 | U | 10 | U |
| Trichloroethene | 10 | U | 10 | U |
| Vinyl Chloride | 10 | U | 10 | U |
| Xylene (Total) | 10 | U | 10 | U |